



Machinery Messages

Using Bently Nevada proximity probes with SLEEVOIL® pillow block bearings

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Large industrial fans are critical to the plants where they are used. In electrical power plants, these fans supply the air which supports combustion in the generating plant's furnaces. In paper mills and process industries, fans are essential to plant operation. When a fan stops operating, a production line can shut down.

That's why the operators of large fans use sophisticated predictive maintenance methods to avoid fan problems. One of the best ways to anticipate a potential problem is to monitor fan vibration. If vibration starts to increase, plant personnel can take steps to correct the problem. One of the best methods to monitor fan vibration uses Bently Nevada proximity probes mounted on the fan bearings.

DODGE manufactures SLEEVOIL® Pillow Blocks which are fully-split hydrodynamic journal bearings used on fans and other rotating equipment. There are three types of SLEEVOIL® bearings; Standard, RTL (Radial Thrust Loaded) and RXT (Radial Extra Thrust). The Standard and RXT bearings carry thrust with a thrust collar mounted on each side of the bearing. The RTL bearing has a centrally located collar to carry the thrust load.

For many years, fan operators have used Bently Nevada 7200 and 3300 Series probes to monitor DODGE SLEEVOIL® bearings. These probes are eight millimetres in diameter and are mounted with a 3/8-24 thread. Two

probes are mounted on each bearing ninety degrees apart to measure shaft vibration, position and the shaft Orbit. DODGE has a standard modification for most SLEEVOIL® bearing housings to accept the 3/8-24 mounting thread. Only the smaller housings cannot have the probes mounted inside the bearing housing.

Axially mounted probes are used to monitor thrust position and vibration. The RXT bearing has nonrotating seals which can be modified for axial probes. The Standard bearings have rotating seals which interfere with axial probes. The RTL bearing has a centrally located thrust collar which is not accessible to axial probes. A Keyphasor® can be used to provide phase information if the phase reference is not available elsewhere in the system.

In the past, the 3/8-24 mounting thread has been the standard for SLEEVOIL® housings. Recently, there has been a move to use Bently Nevada proximity probe housing assemblies

(21000 & 24701) to enclose the probe. These assemblies mount and house the 3/8-24 probes. However, the housings mount with a 3/4-14 NPT thread. This thread is too large to machine into many of the SLEEVOIL® housings.

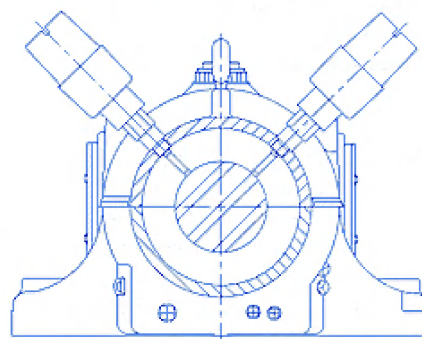
To accommodate both the larger 3/4-14 NPT housings and the standard 3/8-24 probe, DODGE has modified the machining for proximity probes. They now machine a 7/8-14 thread into its housings and make two adapters that can go into this hole. The first is a 7/8-14 to 3/8-24 bushing adapter used to mount the 3/8-24 probes. The second is a 7/8-14 to 3/4-14 NPT bushing adapter used to mount the 3/4-14 NPT proximity probe housing assemblies.

DODGE has added the 7/8-14 mounting thread as a standard machining option on many SLEEVOIL® Pillow Blocks. These mounting provisions and adapters allow fan manufacturers and fan users to install all Bently Nevada probes. The advantages are obvious.

"Free" bearings can be monitored by looking directly at the shaft with a proximity probe. Monitoring "fixed" (non-expansion or held) bearings is more complicated as the thrust collars take up free space in the bearing housing. The probes must usually look at the thrust collar to see the radial movement. This generally requires that the thrust collars be integral to the shaft.

SLEEVOIL® bearing customers can specify the Bently Nevada probe mounting provisions from the DODGE factory. The probe styles and locations are pre-engineered, which means a faster delivery and lower cost than would be possible with custom designs. While not all sizes and styles of SLEEVOIL® bearings have these provisions, those that do, offer the added assurance that probe locations will meet the requirements of DODGE and Bently Nevada.

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Typical SLEEVOIL® bearing installation of Bently Nevada proximity probes in NEMA enclosures.